

**UNIVERSITY OF BAHRAIN
COLLEGE OF INFORMATION TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE**

ITCS 385 – Database Systems

**Midterm
Semester II, 2012-2013**

Date: Sunday, April 7th, 2013

Time: 3:00pm - 4:30pm

Name		
Student I.D.		
Section	[1] [2] [3]	<i>Please tick one</i>

Question 1 (PART A)	9	
Question 1 (PART B)	9	
Question 2	12	
Question 3	12	
Question 4	8	
TOTAL	50	

Notes:

1. Your answers must be written on the question paper and in the place allocated. Any answer written on any other place will not be marked.
2. Use the back of the pages for any rough work, BUT remember rough work will not be marked.
3. Do not give more than one answer (alternative solutions) to the same question; if you do so then only the first answer will be marked.
4. **Switch off your mobile** and keep it in your pocket or bag.

Question 1**PART A [3+ 6 = 9 marks]**

1. Explain the meaning of the following terms:

Database: _____

User View: _____

2. Briefly compare between the traditional file-based processing of database applications and the DBMS approach with respect to the following viewpoint:

	TRADITIONAL FILE-BASED PROCESSING	DBMS APPROACH
Data Description and Structure		

PART B [5 +4= 9 marks]

- Database Schema:** _____

Database State: _____

Question 2 [14 marks]

Consider the following requirements for a Conference_Review database in which authors submit research papers for consideration.

The database system is developed particularly for reviewers to record their comments with regards whether to accept or reject a submitted paper. Each submitted paper is assigned a unique identifier number by the system and is described by a title, abstract, keyword(s), and at least one author. Authors of papers are uniquely identified by email address, first and last names are also recorded. A paper may have multiple authors, but one of the authors is designated as the contact author.

Reviewers of papers are uniquely identified by email address. Each reviewer's first and last name, phone number, affiliation, and one or more topics of interest are also recorded. Each paper is assigned between two and four reviewers. A reviewer rates each paper assigned to him or her on a scale of 1 to 10 in two categories: originality, and relevance to the conference. Finally, each reviewer provides an overall recommendation regarding each paper to be accepted or rejected .

Design an ERD for this application. Note any unspecified requirements, and make appropriate assumptions to make the specification complete.

Question 3 [6 + 6=12marks]

Consider the following database schema and data definition for a car dealership database. The dealership consists of a number of departments. Each department has a number of salespersons, and a manager salesperson. Each car has a unique carID and can be sold only by one salesperson. Once the car is sold, it cannot be returned back to the dealership for another sale. A customer can buy many cars at the same time.

Car(CarID, Model, Price)

SalePerson(SalesPersonID, Name, Tel, DeptID)

Sales(SerialNo, SalesPersonID, CarID, SaleDate, CustomerCPR, CustomerName, SalePrice)

Department(DeptID, DeptName, ManagerID)

Attribute	Format
CarID SalesPersonID SerialNo DeptID ManagerID CustomerCPR	Integer
Name Model DeptName CustomerName	Characters: size 25
Tel	Integer: size 8

Attribute	Format
SaleDate	Date, Format:DD-MM-YYYY For example: 7 th April 2013, is stored as: 07-04-2013
Price SalePrice	Floating point number, with two decimal places.

PART A

Specify the primary, foreign, candidate, and alternate keys for each relation above, stating any assumption you make.

	Primary Key	Foreign Key	Candidate Key	Alternate Key
Car				
SalesPerson				
Sales				
Department				

PART B

- Populate the relations in part (A) with a few example tuples (i.e. two/three tuples per relation), and then give an example of:
 - A deletion that violates the referential integrity constraint.
 - An insertion that violates the domain and key constraints.
 - An update that does NOT violates any of the integrity constraints.

Question 4 [2 + 2 + 2 + 2 = 8]

Consider the database schema in Question (3) to write the following SQL queries.

1. Display the all car models available in the dealership (repeated model values should be displayed once).

2. List the ID, and name of all salespersons working in one of the following departments ID: 100, 200, 300.

3. List the carID, and SalePrice of all cars sold in year 2012.

4. Write SQL statement to rename the 'Tel' attribute to 'Telephone' in SalesPerson relation.
